

Remarks

With respect to the objection, claim 24 has been rolled into claim 1 and the word "of" does not appear in amended claim 1.

The Office Action rejected each of claims 22, 23 and 25 as anticipated by Van Mill. Applicant has amended claim 22 to now include the limitations of original claim 24 – The Examiner indicated that claim 24 was not anticipated by Van Mill. Thus, Applicant believes amended claim 22 and claims that depend therefrom are patently distinct over Van Mill alone and requests that this rejection be withdrawn.

With respect to claim 25, claim 25 depends from claim 22 and further requires that the step of adjusting include actuating an actuator extending between the main beam and the mainframe. Van Mill fails to teach or suggest that the step of adjusting the gang angle includes adjusting an actuator that extends between the mainframe and the main beam of the gang assembly. To this end, the term "mainframe" is typically used in the art to refer to a unitary construction including integrally formed components where construction components do not change relative juxtapositions. Consistent with this understanding of the term "mainframe", Van Mill teaches that a mainframe assembly 11 includes a rectangular frame 25 including front end 26, rear end 27 and side members 28 and 29 that interconnect end members 26 and 27 where all of members 26-29 are integrally formed (see col. 3, lines 3-8). In the art other framing or supporting subassemblies that move with respect to a mainframe are usually referred to by some other term or phrase to distinguish those subassemblies from the mainframe. In this regard, Van Mill refers to assembly 21 that is mounted to the mainframe 11 for pivotal movement therewith as a "rear frame assembly 21" (see col. 4, line 12 and also col. 5, lines 24-39 that teaches movement of rear frame 21 with respect to the mainframe 11). The present specification uses the term "mainframe" in a similar fashion to refer to a unitary or integrated frame assembly where components thereof do not move with respect to each other.

Referring to Van Mill's Fig. 2, rear frame 21 is located between mainframe 11 and gangs 108 and 109 and therefore, whatever Van Mill's adjusting mechanism, the adjusting mechanism clearly does not extend between the mainframe 11 and main beams 115. To adjust gang angle, Van Mill teaches rotation of a handle 126 to

slide a weldment 123 within a hollow tube 118 to force fasteners 122 and gang assemblies attached thereto into different positions. Thus, the adjusting step adjusts an actuator that resides within the rear frame assembly instead of adjusting an actuator that extends between the gang assembly main beam and the mainframe. For at least this additional reason Applicant believes claim 25 is patentably distinct over Van Mill.

The Office Action rejected each of claims 24 and 26-28 as obvious over Van Mill in view of Domries. As indicated above, claim 24 limitations have been rolled into amended claim 22 and therefore this rejection is applicable to amended claim 22 and Applicant respectfully traverses the rejection of amended claim 22. In addition, Applicant respectfully traverses the rejection of original claim 27.

With respect to amended claim 22, claim 22 requires, among other things, that the adjusting step include pivoting one end portion of the main beam of the disc gang about a vertical axis while permitting a pin extending from another portion of the main beam to slide within an elongated slot of the mainframe. Referring to Fig. 3 of the present specification, a first end of frame member 84 is mounted at a first end to pivot about 118.

While the "first end pivot" limitation may seem undistinguishing at first blush, this limitation is important. To this end, by pivoting the frame about one end, only one other brace or support structure at the opposite end of the frame 84 is required to completely support both ends of the frame member 84. In addition, the first end pivot limitation enables a configuration wherein first and second frames can be mounted side by side as in Fig. 3 of the present specification with their pivots 118 adjacent each other. Where the pivots 118 are adjacent each other, the frames can be adjusted such that the discs 86 supported by each of the frames are aligned in a single line irrespective of the gang angle. Thus, where the gang angle is 5 degrees the discs 86 supported by each of the frame members 84 can be aligned and, similarly, where the gang angle is 10 degrees, the discs 86 can also be aligned. Disc alignment can be important to causing a uniform effect across the entire width of an implement.

As recognized by the Examiner, Van Mill fails to teach the limitations of claim 24 that have been added via amendment to claim 22. Specifically, Van Mill fails to teach or suggest a mainframe that includes an elongated slot for slidably receiving a pin extending from a gang assembly. In fact, referring again to Van Mill's Fig. 2, gang assemblies 108 and 109 are not directly mounted (i.e., a pin from the gang assembly received in a slot formed by the mainframe) to Van Mill's mainframe as required by claim 22 and instead are only indirectly mounted to the mainframe via the "rear frame subassembly" 21 as discussed above.

Turning to Domries, while Domries teaches a frame including members 152 and a central plate 155 that is mounted for movement about a pivot axis 143, Domries teaches that it is the central part of the frame including members 152 and plate 155, not an end of the frame, that is pivotally mounted. To this end, see col. 6, lines 11-15 that teaches that a bolt 157 extends through a bolt hole 156 to support frame members 152 for pivotal movement about a pivot axis 143. Here, as taught in Domries, a separate bracket or support sub-assembly including bolt and nut assemblies 168 is required at each end of frame members 152 to provide support along the entire length of the frame members 152.

In addition, because Domries' frame members 152 are centrally mounted to the mainframe, if Domries' teachings were used to configure a system like the one in Fig. 3 of the present specification that includes two sets of discs supported by separate frame assemblies, the discs could not be aligned irrespective of gang angle. Thus, for instance, where two frame assemblies are aligned at 5 degree gang angles, if the gang angles were increased to 10 degrees, the discs supported by the separate frame assemblies would be misaligned. Thus, Domries teaches away from providing a frame member that mounts at one end to a mainframe and a less desirable configuration results.

For the above reasons, Applicant believes amended claim 22 is patentably distinct over Van Mill in view of Domries.

With respect to original claim 27, claim 27 requires, among other things, cutting soil using a disc gang wherein the disc gang includes a main beam mounted to the front end of a mainframe, wherein the disc support beam resides in front of the main beam. Referring to Figs. 3 and 4 of the present specification, the main and

disc support beams are identified by numerals 100 and 98, respectively, where the discs are mounted to the disc support beam 98 via spaced carrier springs 90 and an axle (not numbered).

Van Mill fails to teach or suggest a gang assembly including a main beam (this is in addition to the mainframe as claimed) and a disc support beam for supporting the discs where the disc support beam is positioned in front of the main beam during pulling of the implement. In this regard, referring to Van Mill's Fig. 2 and specifically to the gang subassembly associated with rear frame assembly 21, Van Mill's main beam is 115 and the unnumbered beam between gang subassembly 108 and main beam 115 is the disc support beam. Clearly there are no beams or other structure akin thereto behind the unnumbered beam and the unnumbered disc support beam resides behind main beam 115 (i.e., the exact opposite of the claim 27 orientation). Similarly, referring still to Van Mill's Fig. 2 and specifically to the front gang subassembly (i.e., the assembly including gangs 46 and 48), Van Mill teaches a main beam 30 and a disc support beam 48 where disc support beam 48 resides behind main beam 30 – again, Van Mill teaches a main and disc support beam orientation that is the exact opposite of that required by claim 27. Thus, Van Mill teaches away from placing disc support beams in front of gang assembly main beams.

While this main beam-disc support beam limitation may appear unimportant at first blush, Van Mill can be used to show the importance of this limitation. In this regard, refer again to Van Mill's Fig. 2 that shows shanks 61 mounted about midway along mainframe 11 where the front end of mainframe 11 is reserved for supporting gang assemblies 44 and 46. Here, because the main beam members 30 reside in front of the disc support beams 48, additional mainframe structure is required to support the main beams and gang assemblies generally. Referring still to Van Mill's Fig. 2, if beams 30 were placed behind disc support beams 56 instead of in front of beams 56 and beams 48 were placed above discs 47 instead of in front of discs 47 (see For instance Fig. 5 of the present application), mainframe members 28 could be shortened by about 1/4th their illustrated length and achieve the same function. Thus, the main beam-disc support beam limitation results in a simpler and likely less expensive overall design.

Claim 27 further requires that the main beam be at the front of the mainframe. This limitation is consistent with the overall goal of reducing configuration size. In this regard, if a disc support beam were located in front of a main beam in a gang sub-assembly and the gang sub-assembly were placed near the rear of a mainframe, the sub-assembly configuration would disadvantageously increase the overall size of the configuration required to perform a similar process as longer or more components would be required to support the main beam behind the disc support beam. Instead, the combination of a gang sub-assembly proximate the front end of the mainframe and a main beam behind the disc support beam as required by claim 27 results in a relatively small size and simplified configuration.

Turning to Domries, Domries fails to teach or suggest a disc gang including both a main beam and a disc support beam. In this regard, referring to Domries Fig. 1, Domries teaches only one beam structure including a pair of parallel sub frame members 152 that mount to a mainframe where mounting frames 180 extend beneath the sub frame members 152 and where an axle 181 is mounted to the mounting frames 180 for supporting discs 184 thereon. Here, the pair of sub-frame members 152 each support the discs and therefore sub-frame members 152 together comprise a disc support beam and Domries fails to teach or suggest a main beam.

Because Domries does not teach both a main beam and a disc support beam, it is not surprising that Domries fails to teach or suggest placing a disc supporting beam in front of a main beam.

In addition, claim 27 also requires a pin coupled to the main beam that slides along an un-segmented guide in a plate attached to the mainframe. As recognized by the Examiner, Van Mill fails to teach this limitation. With respect to Domries, as indicated above, Domries only teaches a disc support beam and not a main beam and therefore cannot teach a main beam from which a pin extends.

Thus, neither Domries nor Van Mill teaches or suggests a method wherein a disc support beam resides in front of a main beam. In addition, neither reference teaches or suggests a method wherein a disc support beam resides in front of a main beam at the front of a mainframe. Moreover, neither reference teaches a

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method wherein a disc support beam resides in front of a main beam and where a pin extends from the main beam and engages a guide.


For at least these reasons Applicant believes claim 27 and claim 28 that depends therefrom are patentably distinct over Van Mill in view of Domries.

Applicant has introduced no new matter in making the above amendments and antecedent basis exists in the specification and claims as originally filed for each amendment. In view of the above amendments and remarks, Applicant believes claims 22, 23 and 25-28 of the present application recite patentable subject matter and allowance of the same is requested. No fee in addition to the fees already authorized in this and accompanying documentation is believed to be required to enter this amendment, however, if an additional fee is required, please charge Deposit Account No. 17-0055 in the amount of the fee.

Respectfully submitted,

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Date: 12-28-04

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